

THURSDAY, JULY 25, 1907.

DILLENIAN MEMORIALS AT OXFORD.

The Dillenian Herbaria: an Account of the Dillenian Collections in the Herbarium of the University of Oxford, together with a Biographical Sketch of Dillenius, Selections from his Correspondence, Notes, &c. By G. Claridge Druce. Edited, with an introduction, by Prof. H. Vines, F.R.S. Pp. cxii+258. (Oxford: The Clarendon Press, 1907.) Price 12s. 6d. net.

THIS volume is a valuable contribution to the history of the botanic preeminence of Oxford in the first half of the eighteenth century. It is significant that the three men Carl Linnæus visited in 1736 were Sir Hans Sloane, Philip Miller, and Dillenius. His credentials to the first were a commendatory letter from Boerhaave; but Sloane was then seventy-six, he had seen the rise and fall of many botanic arrangements, was a follower of our own John Ray, whose system he had adopted when indexing his large collections of plants, and was averse to further change. To him the young Swede of twenty-nine, with a brand new scheme of his own, was a visionary to be dismissed with speed, and therefore, with a few cold compliments, Linnæus departed. With Philip Miller, the gardener to the Company of Apothecaries at Chelsea, he became acquainted, bringing with him letters from his patron Clifford, and a mutual appreciation was the result. The residence of Dillenius at Oxford was the chief attraction which drew Linnæus to that place; there he stayed a month, and might have shared the liberal offer of Dillenius to divide the emoluments of the professorship between them had he so wished.

At this time Dillenius had been only two years installed as Sherardian professor, though he had received the stipend from the death of William Sherard. His tenure of the chair from 1734 to his death in 1747 was a bright interlude between two uneventful periods.

Mr. Druce has drawn up this account of the collections left by Dillenius, and has critically examined the specimens preserved as vouchers, illuminating many doubtful passages in the third edition of Ray's "Synopsis," and practically disposing of the dubious entries which have troubled many subsequent botanists. For studies of this character the facilities offered at the Botanic Garden, Oxford, are extremely good, and only to be excelled by the Sloane volumes in the department of botany, Cromwell Road. Mr. Druce has performed a labour of love in bestowing the work of years on these collections, and should be encouraged to persevere until all the more important of the pre-Linnean herbaria at Oxford are enumerated in similar detail. It should not be forgotten that the types of Sibthorp's splendid "Flora Græca" are also preserved at Oxford.

The introduction by Prof. Vines is an appreciative essay on the position of Dillenius as regards his contemporaries; then, with a single page of preface, Mr. Druce gives a life of Dillenius and bibliography, a

full selection from his extant correspondence (the letters from Linnæus have, unhappily, disappeared), and thus, after an ample preamble, the principal portion of this volume begins.

Part v. opens with the collation of the Dillenian edition of Ray's "Synopsis" issued in 1724, with the plants preserved in that special herbarium. This edition was practically the chief guide of British botanists for something like forty years, in fact until Hudson's "Flora Anglica" superseded the Raian method by the Linnean system and nomenclature. We have for the first time an authoritative statement of what is in the herbarium, and what stands there for any given name.

Next and in similar fashion we find an account of the specimens representing the plates and descriptions in the "Hortus Elthamensis," that account of the garden of James Sherard the plates of which were etched by Dillenius. Following this we come to the great work of the author, the "Historia Muscorum," with a prefixed statement of the authorities whose determinations are the basis of the modern reductions; errata and index close this interesting volume.

The temptation to dwell longer on this theme is strong, but must be resisted; the book vividly recalls days spent long ago amongst these very plants and manuscripts, and this notice must end with the hope that another instalment from this treasure house may in due time be forthcoming.

B. D. J.

THE FOURTH INTERNATIONAL ORNITHOLOGICAL CONGRESS.

Proceedings of the Fourth International Ornithological Congress, London, June, 1905, forming Vol. xiv. of the "Ornis." Edited under the direction of the President D. R. Bowdler Sharpe, by the Secretaries, Dr. Ernst J. O. Hartert and J. Lewis Bonhôte. Pp. 696; with 18 plates. (London: Dulau and Co., 1907.) Price 21s. net.

AS in many other branches of science, the ornithologists have established an international congress, and the official account of their fourth meeting, held in London in June, 1905, is now before us. It forms a handsome and well-illustrated volume of 696 pages, and constitutes also the fourteenth volume of *Ornis*, the official journal of the association, which accompanies the presidency of the congress when it is moved from one country to another.

The first meeting of the International Congress of Ornithologists was held at Vienna in April, 1884, under the presidency of Dr. Gustav Radde, of Tiflis, and owes its inception, more or less, to the ill-starred Crown-Prince Rudolph of Austria, who had a certain amount of interest in natural history, inspired chiefly, we believe, by one of the Brehms, his personal friend and companion. The meeting at Vienna was a success to a certain extent, and was followed seven years later by the second meeting, which took place at Budapest in 1891. This congress was very well attended, and was carried out with great *éclat* by the enthusiastic naturalists of the Hungarian capital. English ornithology was represented by the

late Mr. Danford and by Dr. Bowdler Sharpe, who read there an important paper on the classification of birds. The presidents on this occasion were Prof. Victor Fatio, of Geneva, and Dr. Otto Herman, of Budapest. The next meeting of the congress was deferred for several years from various causes. But the difficulties were at length surmounted, and the ornithologists of every part of the world were invited to assemble at Paris in June, 1900, under the presidency of the late Dr. Oustalet, the head of the magnificent collection of birds in the Jardin des Plantes. Although ornithologists are not numerous in France, the meeting in Paris was very well attended, and included visitors from all parts of the world. Many excellent communications were made to it. At the close of the *séances* it was resolved that the next (fourth) meeting of the congress should take place in England in 1905, and Dr. R. Bowdler Sharpe, the well-known head of the Bird Department at the Natural History Museum, South Kensington, was selected as its president. The present volume gives us a full account of the proceedings of this meeting, which was held in London in June, 1905, and was attended not only by the English devotees of ornithology, but by representatives of that science from France, Germany, Austria, Hungary, Italy, Holland, Belgium, Russia, Sweden, Switzerland, the United States, Canada, and Australia.

The fourth congress was opened at the Imperial Institute, South Kensington, on June 12 by a few words from the outgoing president, Dr. Oustalet, who then vacated the chair in favour of Dr. Sharpe, the new president. Dr. Sharpe gave a most interesting and instructive address on the origin and progress, from 1753 to the present time, of the national bird-collection in the British Museum, which is now by far the finest and most nearly complete of its kind in the world. This address, which is printed in full in the present volume, gives particulars of the additions made to the great collection year by year since its foundation, together with details on its mode of arrangement and government. By bequest, purchase, and presentation, Dr. Sharpe tells us, nearly every large private collection of birds made in England has ultimately passed into the British Museum, including those of the late Marquess of Tweeddale, Mr. Seebohm, Mr. Crowley, Mr. Allan Hume, Dr. Sclater, Mr. Osbert Salvin, Dr. Godman, and other well-known naturalists.

After the president's address the present volume is mainly occupied with the papers read at the meetings of the congress and at its various sections. These sections were five in number—systematic ornithology and distribution; migration; biology and nidification; economic ornithology; and aviculture. Excellent communications, altogether forty in number, were made on all these subjects. They are mostly of a somewhat technical character, but we may direct attention to Mr. Walter Rothschild's paper on extinct and vanishing birds, which was splendidly illustrated by the large series of specimens and drawings shown to the ornithologists when they made

their excursion to Tring. We may also invite notice to Mr. Pycraft, who writes on the origin of the differences between the various kinds of nestlings, and seeks to justify his ingenious theory that all birds "were originally arboreal."

Those who require information on the eleven Acts for the Protection of Wild Birds passed by our Parliament may refer to Sir Digby Pigott's paper on this difficult subject read before the economic section, while those who keep birds in aviaries should not fail to study Mr. D. Seth-Smith's address on the importance of aviculture as an aid to the study of ornithology. The numerous and interesting facts ascertained by the votaries of this new branch of science are well set out in Mr. Seth Smith's contribution to the present volume.

THERMODYNAMICS.

Thermodynamics: an Introductory Treatise dealing mainly with First Principles and their Direct Applications. By Prof. G. H. Bryan, F.R.S. Pp. xiv + 204. (Leipzig: B. G. Teubner; London: D. Nutt; Williams and Norgate, 1907.)

PROF. BRYAN has not been content in this work to follow closely the beaten track, but has given us the results of much original research. The fundamental conceptions of energy, available or unavailable, of entropy, and of temperature are given in their simplest form (see the general summary at end of the book).

As the conception of temperature is for the most part new, and throws much light on the subject, it is well to set out the author's definition. The absolute temperature of a body M is to be understood, and can be defined, only with reference to another standard body N. It is the ratio between the quantities of heat respectively taken from M and imparted to N, when M is used as reservoir, N as refrigerator in a reversible Carnot cycle. This, of course, is, and is intended to be, a theoretical definition only; and a theoretical definition is needed. Similarly, the entropy of a body cannot be defined as an absolute quantity. We can only say that in certain circumstances it increases or diminishes. In all irreversible transformations it increases by an amount equal to the available energy transformed into unavailable energy. Two definitions of entropy are given at p. 58.

Prof. Bryan encounters the usual difficulty in defining temperature, density, &c., at a point in a molecular medium. Given a continuous medium, we say that (for instance) the density at P is the limiting ratio of quantity to the containing volume when that volume (which contains P) becomes infinitely small. That definition is irreproachable, but, as applied to a medium consisting of discreet molecules, wholly devoid of meaning. It is possible to give a logical definition by proceeding to the limit in the other direction. But in practice—and Bryan follows the practice—it is usual to define density as the number of molecules in an element of volume at P—large compared with molecular dimensions, it being assumed for the purpose of the definition that the density may